

PCT

WORLD INTELLECTUAL PROPERTY ORGANIZATION
International Bureau



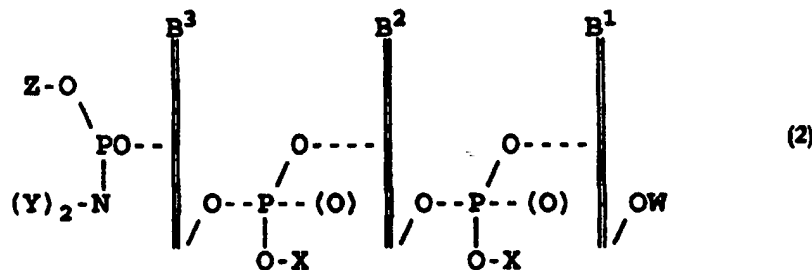
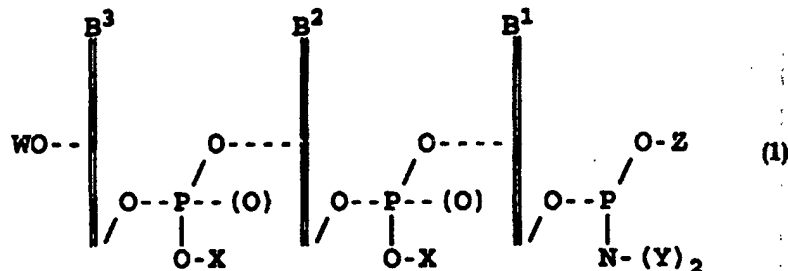
INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 6 : C07H 21/00, C12N 15/09, C12Q 1/68		A3	(11) International Publication Number: WO 96/16073
			(43) International Publication Date: 30 May 1996 (30.05.96)
(21) International Application Number: PCT/US95/15319		(81) Designated States: AU, CA, JP, European patent (AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE).	
(22) International Filing Date: 22 November 1995 (22.11.95)			
(30) Priority Data: 08/344,820 23 November 1994 (23.11.94) US		Published <i>With international search report.</i>	
(71) Applicant: TERRAPIN TECHNOLOGIES, INC. [US/US]; 750-H Gateway Boulevard, South San Francisco, CA 94080 (US).		(88) Date of publication of the international search report: 1 August 1996 (01.08.96)	
(72) Inventors: LYTTLE, Matthew, H.; P.O. Box 1116, Point Reyes Station, CA 94956 (US). KAUVAR, Lawrence, M.; 1205 Cole Street, San Francisco, CA 94117 (US).			
(74) Agents: DROST, Patricia, M. et al.; Morrison & Foerster, 2000 Pennsylvania Avenue, N.W., Washington, DC 20006 (US).			

(54) Title: **CODON AMIDITES AND METHOD OF USING THEM TO PRODUCE OLIGONUCLEOTIDES AND MUTAGENESIS LIBRARIES**

(57) Abstract

Compounds of formula (1) or (2) wherein W, X, Y and Z are each independently hydrogen or a protecting group; B¹, B² and B³ are each independently a base selected from the group consisting of adenine, guanine, cytosine, thymine and uracil; and || is the residue of a ribose or deoxyribose, and methods for their synthesis and use are disclosed.



Item	Quantity	Unit	Value
1. 1000	1000	1000	1000
2. 1000	1000	1000	1000
3. 1000	1000	1000	1000
4. 1000	1000	1000	1000
5. 1000	1000	1000	1000
6. 1000	1000	1000	1000
7. 1000	1000	1000	1000
8. 1000	1000	1000	1000
9. 1000	1000	1000	1000
10. 1000	1000	1000	1000
11. 1000	1000	1000	1000
12. 1000	1000	1000	1000
13. 1000	1000	1000	1000
14. 1000	1000	1000	1000
15. 1000	1000	1000	1000
16. 1000	1000	1000	1000
17. 1000	1000	1000	1000
18. 1000	1000	1000	1000
19. 1000	1000	1000	1000
20. 1000	1000	1000	1000
21. 1000	1000	1000	1000
22. 1000	1000	1000	1000
23. 1000	1000	1000	1000
24. 1000	1000	1000	1000
25. 1000	1000	1000	1000
26. 1000	1000	1000	1000
27. 1000	1000	1000	1000
28. 1000	1000	1000	1000
29. 1000	1000	1000	1000
30. 1000	1000	1000	1000
31. 1000	1000	1000	1000
32. 1000	1000	1000	1000
33. 1000	1000	1000	1000
34. 1000	1000	1000	1000
35. 1000	1000	1000	1000
36. 1000	1000	1000	1000
37. 1000	1000	1000	1000
38. 1000	1000	1000	1000
39. 1000	1000	1000	1000
40. 1000	1000	1000	1000
41. 1000	1000	1000	1000
42. 1000	1000	1000	1000
43. 1000	1000	1000	1000
44. 1000	1000	1000	1000
45. 1000	1000	1000	1000
46. 1000	1000	1000	1000
47. 1000	1000	1000	1000
48. 1000	1000	1000	1000
49. 1000	1000	1000	1000
50. 1000	1000	1000	1000
51. 1000	1000	1000	1000
52. 1000	1000	1000	1000
53. 1000	1000	1000	1000
54. 1000	1000	1000	1000
55. 1000	1000	1000	1000
56. 1000	1000	1000	1000
57. 1000	1000	1000	1000
58. 1000	1000	1000	1000
59. 1000	1000	1000	1000
60. 1000	1000	1000	1000
61. 1000	1000	1000	1000
62. 1000	1000	1000	1000
63. 1000	1000	1000	1000
64. 1000	1000	1000	1000
65. 1000	1000	1000	1000
66. 1000	1000	1000	1000
67. 1000	1000	1000	1000
68. 1000	1000	1000	1000
69. 1000	1000	1000	1000
70. 1000	1000	1000	1000
71. 1000	1000	1000	1000
72. 1000	1000	1000	1000
73. 1000	1000	1000	1000
74. 1000	1000	1000	1000
75. 1000	1000	1000	1000
76. 1000	1000	1000	1000
77. 1000	1000	1000	1000
78. 1000	1000	1000	1000
79. 1000	1000	1000	1000
80. 1000	1000		

FOR THE PURPOSES OF INFORMATION ONLY

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AT	Austria	GB	United Kingdom	MR	Mauritania
AU	Australia	GE	Georgia	MW	Malawi
BB	Barbados	GN	Guinea	NE	Niger
BE	Belgium	GR	Greece	NL	Netherlands
BF	Burkina Faso	HU	Hungary	NO	Norway
BG	Bulgaria	IE	Ireland	NZ	New Zealand
BJ	Benin	IT	Italy	PL	Poland
BR	Brazil	JP	Japan	PT	Portugal
BY	Belarus	KE	Kenya	RO	Romania
CA	Canada	KG	Kyrgyzstan	RU	Russian Federation
CF	Central African Republic	KP	Democratic People's Republic of Korea	SD	Sudan
CG	Congo			SE	Sweden
CH	Switzerland	KR	Republic of Korea	SI	Slovenia
CI	Côte d'Ivoire	KZ	Kazakhstan	SK	Slovakia
CM	Cameroon	LJ	Liechtenstein	SN	Senegal
CN	China	LK	Sri Lanka	TD	Chad
CS	Czechoslovakia	LU	Luxembourg	TG	Togo
CZ	Czech Republic	LV	Latvia	TJ	Tajikistan
DE	Germany	MC	Monaco	TT	Trinidad and Tobago
DK	Denmark	MD	Republic of Moldova	UA	Ukraine
ES	Spain	MG	Madagascar	US	United States of America
FI	Finland	ML	Mali	UZ	Uzbekistan
FR	France	MN	Mongolia	VN	Viet Nam
GA	Gabon				

INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 95/15319

A. CLASSIFICATION OF SUBJECT MATTER

IPC 6 C07H21/00 C12N15/09 C12Q1/68

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 6 C07H C12N C12Q

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO, A, 93 21203 (THE JOHNS HOPKINS UNIVERSITY) 28 October 1993 see page 6	1-3, 6-11
P, X	NUCLEIC ACIDS RESEARCH, vol. 22, no. 25, 25 December 1994, OXFORD GB, pages 5600-5607, XP002002308 VIRENKAS B. ET AL: "Trinucleotide phosphoramidites: ideal reagents for the synthesis of mixed oligonucleotides for random mutagenesis" see the whole document	1-3, 6-11

-/-

☒ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

* Special categories of cited documents:

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

T later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

X document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

Y document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

Z document member of the same patent family

Date of the actual completion of the international search

14 May 1996

Date of mailing of the international search report

30.05.96

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+ 31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+ 31-70) 340-3016

Authorized officer

Day, G

INTERNATIONAL SEARCH REPORT

International Application No

PCT, US 95/15319

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
P.X	BIOTECHNIQUES, vol. 19, no. 2, August 1995, NATICK US, pages 274-289, XP002002310 LYTLE M.H. ET AL: "Mutagenesis using Trinucleotide beta-cyanoethyl phosphoramidites" see the whole document	1-11
X	JOURNAL OF ORGANIC CHEMISTRY, vol. 49, 1984, EASTON US, pages 4905-4912, XP002002311 KUMAR G ET AL: "Improvements in oligodeoxyribonucleotide synthesis: methyl N,N-dialkylphosphoramidite dimer units for solid support phosphite methodology" cited in the application see page 4907	4,5
A	WO,A,92 03461 (IXSYS INC) 5 March 1992 see the whole document	9-11

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 95/15319

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO-A-9321203	28-10-93	CA-A- 2133554	28-10-93
		EP-A- 0638089	15-02-95
		JP-T- 8502642	26-03-96
WO-A-9203461	05-03-92	AU-B- 8505191	17-03-92
		CA-A- 2089362	25-02-92
		EP-A- 0544809	09-06-93
		JP-T- 6503809	28-04-94
		US-A- 5264563	23-11-93